



A.D. 1871, 18th APRIL. N^o 1025.

S P E C I F I C A T I O N

OF

WILLIAM ROBERT LAKE.

PLATE OR BASE FOR ARTIFICIAL TEETH.

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Plate or Base for Artificial Teeth.

LETTERS PATENT to William Robert Lake, of the Firm of Haseltine, Lake, & Co., Patent Agents, Southampton Buildings, London, for the Invention of “**AN IMPROVED PLATE OR BASE FOR ARTIFICIAL TEETH.**”
—A communication from abroad by Isaiah Smith Hyatt, John Wesley Hyatt, junior, and Jesse A. Perkins, M.D.S., all of Albany, New York, United States of America.

Sealed the 6th June 1871, and dated the 18th April 1871.

COMPLETE SPECIFICATION filed by the said William Robert Lake at the Office of the Commissioners of Patents, with his Petition and Declaration, on the 18th April 1871, pursuant to the 9th Section of the Patent Law Amendment Act, 1852.

5 **TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM ROBERT LAKE**, of the Firm of Haseltine, Lake, & Co., Patent Agents, Southampton Buildings, London, send greeting.

WHEREAS I am in possession of an Invention for “**AN IMPROVED PLATE OR BASE FOR ARTIFICIAL TEETH,**” and have petitioned Her Majesty to
10 grant unto me, my executors, administrators, and assigns, Her Royal

Lake's Improved Plate or Base for Artificial Teeth.

Letters Patent for the same, and have made solemn Declaration that it has been communicated to me from abroad by Isaiah Smith Hyatt, John Wesley Hyatt, junior, and Jesse A. Perkins, M.D.S., all of Albany, New York, United States of America.

NOW KNOW YE, that I, the said William Robert Lake, do hereby 5 declare that the following Complete Specification, under my hand and seal, fully describes and ascertains the nature of the said Invention, and in what manner the same is to be performed, in and by the following statement:—

In the manufacture of dental plates or bases for artificial teeth, 10 vulcanite or hard rubber which has been extensively employed for the purpose has been found objectionable on account of its dark colour, offensive taste and smell, liability to break when chilled, and difficulty of repairing the plates when broken; moreover there is a large amount of mercury contained in the colouring material (vermillion) employed 15 which renders it particularly obnoxious to some persons, while in addition to the length of time required to manufacture the plates its qualities render it unpleasant for dentists to manipulate. To obviate these objections various experiments and attempts have been made to substitute for such plates compounds of pyroxiline or solid collodion 20 which have hitherto failed to accomplish the desired result. In these experiments collodion has been employed in a partially dissolved state in which it is placed in the casts or moulds containing the teeth and subjected to pressure, and from plates thus formed the solvent material gradually evaporates. This evaporation is attended with such an amount 25 of shrinkage as to warp the plates and impair their shape, and this difficulty in connection with the tedious nature of the process has prevented the adoption of this and similar methods of using pyroxiline. An attempt has also been made to avoid this shrinkage of the formed plates by subjecting the collodion in a nearly dried state to pressure in 30 heated moulds, and then attaching the teeth thereto by the use of powdered collodion and a solvent. This method has also failed for the reason, among others, that the drying of the material by which the teeth are soldered in place has a tendency to leave the teeth loose, while the connection is rendered still less secure on account of the more porous 35 nature of this soldering material which is not subjected to pressure as is the main body of the plates, the line of junction also being frequently discernible from a difference in appearance.

Lake's Improved Plate or Base for Artificial Teeth.

This Invention relates to a dental plate or base for artificial teeth composed of a kind of solid collodion, in which the transformation of the pyroxiline is effected by the use of camphor as a solvent, whereby the thoroughly dried product or collodion is rendered plastic by heat so as
5 to be readily moulded without subsequent shrinkage as hereafter described, and without the use of fixed oils or fusible non-solvent gums which are required to be combined with the material when ether, alcohol, or other solvents are used; these fixed oils and gums forming a part of the permanent compound impair its strength, durability, purity, firmness
10 of texture, and other qualities essential in a dental plate.

In the manufacture of collodion for these improved dental plates I prefer to use at least fifty parts by weight of gum camphor to one hundred parts of soluble cotton (a greater proportion of camphor may be used) whereby the product is rendered more plastic than when a less
15 quantity is employed. The collodion thus produced is made into plates of suitable thickness which are preferably formed into shapes approximating to those of finished dental plates by pressure in heated moulds. The plates thus formed are now thoroughly dried by placing them in a drying room heated to a temperature which should not exceed 180°
20 Fahrenheit, 150° to 180° being the temperature found best adapted for expelling the camphor solvent. A temperature much higher than 200° will expand the material and render it porous and brittle. The plates when properly dried, although freed from liability of shrinkage still retain the quality which enables them to become plastic under a proper
25 degree of heat, and may be readily moulded into any desired shape without subsequently shrinking to any injurious extent. In making a set of teeth with this improved base, the case is prepared and teeth set in plaster by the same process and in the same manner as is done in making a set of hard rubber, except that the trial plate should be made thinner.
30 Care should be taken to use the best quality of plaster and to thoroughly dry the casts before proceeding with the final process. Around the outside of the teeth next to the flask is cut a channel connected by short channels or gates with the inside to receive the excess of material. When the flasks are thus prepared a plate or base is placed
35 in the lower flask and the upper flask upon it, when the two flasks are put into a screw clamp ready to be forced together. The flasks and clamp are then set into a small tank of oil (good sweet oil works well and emits no odour) and a gas jet or alcohol lamp placed under the the oil

Lake's Improved Plate or Base for Artificial Teeth.

tank is lighted and the oil heated to 300° (never above 310° Fahrenheit) on a thermometer attached to the vessel. As the oil heats the plate becomes softened and plastic, when the clamp is gradually screwed down to place, scarcely any force being required until the last, when the proper degree of heat being reached the flasks are forced firmly and completely 5 together. The clamp and flasks are then lifted out of the oil, and if the flasks are seen to be entirely together on all sides the work of moulding is done. The flasks and contents are then immersed in cold water and thoroughly cooled, when upon opening the flasks the case will be seen to be moulded in the most perfect manner, the teeth firmly 10 attached, and the shape of the plaster moulds perfectly taken to the minutest particular. The case is then freed from plaster with a brush and water, finished, and polished as would be done with rubber. Chalk is used as a last finish with cotton, wheel, and water. Among the advantages of this new base are the following:— 15

First. It is lighter and at the same time stronger than dental vulcanite or hard rubber.

Second. Its colour is very near that of the natural gum, and will not change in the mouth.

Third. It is entirely free from all unpleasant taste. 20

Fourth. It is not injurious to any mouth, even the most sensitive, which is not the case with rubber plates containing a large amount of mercury, and it is more pleasant and comfortable to the wearer than plates made of any other known material.

Fifth. It can be manufactured and fitted to the mouth more easily, 25 quickly, and satisfactorily to the operator than any other known base for artificial teeth, saving time and trouble enough to the operator to pay for the plate, and requiring only from one-third to one-quarter of the time used in working rubber. Everything is neat, convenient, and clean, and no unpleasant odour fills the room or attaches to the hands 30 of the dentist.

Sixth. After being thoroughly dried it is easily rendered plastic by heat so as to be readily moulded, while it is free from all liability of shrinking, and consequent warping and derangement of shape after it has been furnished with a set of teeth, which is one of its most important 35 advantages.

Lake's Improved Plate or Base for Artificial Teeth.

Having thus fully described the said Invention as I communicated to me by my foreign correspondents and shown how the same may be conveniently and advantageously carried into practice, I claim the dental plate or base for artificial teeth substantially as herein described.

5 In witness whereof, I, the said William Robert Lake, have hereunto set my hand and seal, this Eighteenth day of April, in the year of our Lord One thousand eight hundred and seventy-one.

WILLIAM ROBERT LAKE. (L.S.)

Witness,

10 E. C. JACKSON.

LONDON :

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